

# Modified snare technique improves left ventricular lead implant success for cardiac resynchronization therapy

J Cardiovasc Electrophysiol. 2020; 31: 2954- 2963

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## Abstract

### Background

Left ventricular (LV) lead placement is the most challenging aspect of cardiac resynchronization therapy (CRT) device implantation, with a failure rate of up to 10% due to complex coronary anatomies. We describe a modified snare technique for LV lead placement and evaluate its safety and efficacy in cases when standard methods fail.

### Methods and Results

A prospective study was conducted of patients indicated for a CRT implant. When LV lead delivery to the target vessel failed using standard techniques, a modified snare technique was employed. Patients were evaluated every 6 months. From 2015 to 2019, 566 CRTs were implanted (26.1% female,  $72 \pm 10.2$  years old, follow-up duration  $18.9 \pm 15.8$  months). The standard LV implant technique failed in 94 cases (16.6%), of which the modified snare technique was successful in 92 (97.9%). There were no differences between the modified snare and standard techniques in the rates of 30-day postimplant CRT all-cause mortality (3.2% vs. 1.7%,  $p = .33$ ), 4-year all-cause mortality (15.9% vs. 15.5%,  $p = .49$ ), or major acute complications (7.4% vs. 3.8%,  $p = .12$ ). However, the 4-year procedural reintervention rate was lower with the modified snare technique (3.2% vs. 10.2%,  $p < .05$ ), specifically LV implant failure or dislodgement rates (0% vs. 5.3%,  $p < .05$ ), improving the response rate (71.8% vs. 55.1%,  $p < .05$ ).

### Conclusions

For challenging coronary sinus anatomies that preclude LV lead placement by standard methods, this modified snare alternative was safe and effective, with comparable mortality and complications, but significantly lower procedural reintervention and higher response rates.

**Keywords:** cardiac resynchronization therapy, efficacy, left ventricular lead, responders, safety, snare technique